

What is claimed is:

1. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae comprising:

5 a shank having a longitudinal axis extending in a first direction and distal and proximal ends;

a cutting head coupled to the distal end of the shank having a first wall terminating at a first cutting edge for cutting a channel in one of the vertebrae; and

10 a guide member extending from the head distal to the cutting edge for insertion into the disc space and having a first leg portion extending in the first direction and a second leg portion extending from the first portion in a direction transverse to the first direction and shaped for scooping cut material from between the vertebrae.

15 2. The chisel of claim 1 wherein the head has a side wall, the first portion of the guide member extending from the side wall, the member including a bend between the first and second portions.

20 3. The chisel of claim 1 wherein the cutting head includes a body defining an inner hollow portion, the body including a wall having an opening communicating with the inner hollow portion and communicating with a distal opening in the body

to receive cut material.

4. The chisel of claim 1 wherein the cutting head includes a pair of opposing first cutting edges in spaced relation to the longitudinal axis, the guide member
5 extending from between the first cutting edges and traverses the longitudinal axis.

5. The chisel of claim 1 wherein the guide member includes at least one second wall at a distal end terminating at a second cutting edge.

10 6. The chisel of claim 5 wherein the second wall of the guide member further includes at least one side cutting edge extending along a periphery of the guide member and contiguous with the second cutting edge.

7. The chisel of claim 5 wherein the second wall of the guide member is a
15 second distance from the longitudinal axis which is less than the first distance from the longitudinal axis of the first cutting edge.

8. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae comprising:
20 a shank having a longitudinal axis extending in a first direction and distal

and proximal ends; and

a cutting head coupled to the distal end of the shank, the cutting head including a body having at least one cantilevered first member extending in a direction substantially parallel to the first direction cantilevered a first distance
5 from the longitudinal axis, the first cantilevered member distally terminating in a first cutting edge extending transverse to the first direction, the first cantilevered member and body defining an open region for providing visual access to a distal end of the cutting head from the head proximal end, the first cutting edge of the first cantilevered member for cutting one of the vertebra, the cutting head further
10 including a guide member extending from the head distal the first cutting edge and positioned for bearing against adjacent vertebrae.

9. The chisel of claim 8 wherein the guide member includes at least one second wall at a distal end terminating with a second cutting edge.

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10. The chisel of claim 8 wherein the second wall of the guide member terminates at a cutting edge extending along a periphery of the guide member contiguous with the second cutting edge.

20 11. The chisel of claim 10 wherein the second cutting edge is a second

distance from the longitudinal axis which is less than the first distance.

12. The chisel of claim 8 wherein the first cutting edge of the at least one cantilevered first member includes a second cutting edge extending at an angle
5 from the first cutting edge in a direction transverse to the direction of the longitudinal axis.

13. The chisel of claim 8 wherein the cutting head includes a pair of opposing cantilevered first members distally terminating in the first cutting edges in spaced
10 relation about the longitudinal axis, and the first cutting edges each including second cutting edges extending substantially perpendicular to the first cutting edges toward one another and in a direction transverse to the direction of the longitudinal axis.

15 14. The chisel of claim 8 wherein the cutting head includes a pair of opposing first surfaces in spaced relation about the longitudinal axis, the guide member extending between the first surfaces along a plane defined by a side wall of the cutting head such that the opening extends between the first surfaces.

20 15. The chisel of claim 8 wherein the first cutting edge is convex.

16. The chisel of claim 8 wherein the first cutting edge is concave.
17. The chisel of claim 8 wherein the first cutting edge is curved in a direction
5 that is transverse to the first direction.
18. The chisel of claim 12 wherein the pair of opposing first surfaces are curved toward one another in a direction transverse to the first direction.
- 10 19. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae, the chisel comprising:
- a shank having a longitudinal axis extending in a first direction and distal and proximal ends; and
- a cutting head coupled to the distal end of the shank, the cutting head
15 including at least one first wall extending generally parallel to the longitudinal axis and being a first distance from the longitudinal axis, the first wall distally terminating with a first cutting edge lying in a plane for cutting a channel in one of the vertebra;
- a guide member having at least one side wall and coupled distally to the
20 head, the at least one side wall of the guide member extending substantially along

a plane generally in the first direction, the guide member having a distal end wall transverse to the longitudinal axis, the guide member at least one side wall and distal end wall defining a substantially central opening therebetween.

5 20. The chisel of claim 19 wherein the guide member includes a peripheral surface around the substantially central opening, a second cutting edge extending along the periphery surface, the second cutting edge for removing material between adjacent vertebrae and extending distally beyond the first cutting edge.

10 21. The chisel of claim 19 wherein the opening in the guide member is a channel partially defined by a web portion extending between at least two opposite sides of the guide member, the cutting head includes an aperture communicating with the channel in the guide member.

15 22. The chisel of claim 19 wherein the first wall has an upper surface, the cutting head further including a lower second surface in spaced opposing relation to the upper surface with the longitudinal axis therebetween, the guide member central opening formed as a lower channel in opposing spaced relation to an upper channel, the cutting head further including a lower aperture in opposing
20 spaced relation to an upper aperture and communicating with the respective

upper and lower channels.

23. The chisel of claim 22 wherein the cutting head further includes upper and lower first walls in opposing spaced relation about the longitudinal axis, and each of the upper and lower first walls terminating in a first cutting edge in mirror image relationship with each other.

24. The chisel of claim 19 wherein the cutting edge of the first wall is V-shaped formed by two cutting edges interconnected at the apex of the V.

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25. The chisel of claim 19 wherein the guide member defines a substantially central hollow opening extending therethrough and communicating with a substantially central opening in the head which extends through the head.

15 26. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae comprising:

a shank having a longitudinal axis extending in a first direction and distal and proximal ends;

a cutting head having proximal and distal ends with the proximal end coupled to the distal end of the shank, the cutting head including a first cutting

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portion comprising at least one first wall extending along a plane in the first direction and spaced a first distance to the longitudinal axis, the first wall terminating at a first cutting edge at the head distal end spaced from the axis and lying in a plane; and

5 a guide member extending from the head distal end in the first direction and having an end wall traversing the longitudinal axis, the guide member including a second cutting portion comprising a longitudinally extending second cutting edge extending distally beyond the first cutting edge, a second distance between the second cutting edge and the longitudinal axis being less than the first
10 distance.

27. The chisel of claim 26 wherein the guide member further includes a plurality of side walls, the second cutting portion of the guide member including at least two second cutting edges in spaced relation at the side walls with the longitudinal
15 axis therebetween.

28. The chisel of claim 26 wherein the second cutting portion of the guide member includes two upper cutting edges in spaced relation extending from a periphery of the side walls along substantially parallel planes with the longitudinal
20 axis therebetween and two lower cutting edges in spaced relation extending from

a periphery of the side wall in mirror image relation to the two upper cutting edges.

29. The chisel of claim 26 wherein the guide member has a hollow central region with opposing walls and includes a web portion extending between the
5 opposing walls in the central region.

30. The chisel of claim 26 wherein the first cutting edge is serrated and lies in a direction that is transverse to the direction of the longitudinal axis.

10 31. The chisel of claim 26 wherein the guide member defines a substantially central opening and the head defines an opening having distal and proximal ends, the guide member opening communicating with the head opening at the opening distal end.

15 32. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae, the chisel comprising:

a shank having a longitudinal axis defining a longitudinal direction and distal and proximal ends; and

a cutting head coupled to the distal end of the shank, the cutting head
20 having a body including a first cutting portion comprising two side walls extending

in spaced relation to each other in the longitudinal direction and a top wall connecting the two side walls such that a first through opening is defined between the top wall and the side walls of the cutting head passing through the top and side walls in a longitudinal direction parallel to the longitudinal axis, the side walls and top wall terminating in first cutting edges distal to the shank for forming a channel in at least one of the vertebrae;

the cutting head further including a guide member one piece and integral with the body and positioned distal to the first cutting portion and extending substantially along the longitudinal axis, the guide member having a wall traversing the longitudinal axis, the guide member being coextensive with and an extension of a central portion of the head forming an interior surface of the first opening.

33. The chisel of claim 32 wherein the guide member is defined by a plurality of side walls, the guide member including a second cutting portion distal from the first cutting portion where the second cutting portion comprises at least one second cutting edge along the periphery of the wall of the guide member.

34. The chisel of claim 33 wherein the second cutting portion includes two upper cutting edges in spaced relation extending from the periphery of the side

walls along substantially parallel planes with the longitudinal axis therebetween, the guide member including two lower cutting edges in spaced relation extending from a periphery of the side wall in mirror image relationship with the two upper cutting edges.

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35. The chisel of claim 32 wherein the head side walls and a head bottom wall terminate in third cutting edges distally the shank for forming a channel in a second of said at least one of the vertebrae, the third cutting edges being a mirror image of the first cutting edges for forming a further opening which is a mirror
10 image of the first opening.

36. The chisel of claim 32 wherein head has proximal and distal ends, the proximal end being coupled to the shank, the guide member extending from the head distal end and including a plurality of side walls, a top wall and a bottom wall
15 defining a through chamber extending substantially along the longitudinal axis and communicating with a second opening in the cutting head adjacent to the shank at the head proximal end, the side, top and bottom walls of the guide member distally terminating in second cutting edges.

20 37. The chisel of claim 36 wherein the body of the cutting head has a top

surface coextensive with a top surface of the guide member, the second opening being formed in the body top surface.

38. The chisel of claim 33 wherein the head has proximal and distal ends and
5 top and bottom surfaces at the proximal end which is coupled to the shank, the
guide member extending from the head distal end and including a plurality of side
walls, a top wall and a bottom wall defining a through chamber extending
substantially along the longitudinal axis and communicating with a second opening
in the head top surface and with a third opening in the head bottom surface, the
10 side, top and bottom walls of the guide member distally terminating in second
cutting edges.

39. A chisel for preparing adjacent vertebrae for insertion of a spinal implant
into the disc space defined by the vertebrae, the chisel comprising:
15 a shank having a longitudinal axis extending in a first direction and distal
and proximal ends; and
a cutting head having distal and proximal ends, the proximal end being
coupled to the distal end of the shank, the cutting head including a first cutting
portion comprising at least one first wall extending in the first direction and spaced
20 a first distance from the longitudinal axis, the first wall distally terminating at a first

cutting edge at the head distal end transverse to the longitudinal axis and lying in a plane; and

a guide member extending in the first direction distally from the head distal end and having a second cutting portion positioned distal to the first cutting portion, the
5 guide member second cutting portion having a distal end terminating at a second cutting edge extending transverse to the longitudinal axis.

40. The chisel of claim 39 wherein the at least one first wall includes multiple first cutting edges in stepped relation to one another.

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41. The chisel of claim 39 wherein the cutting head has a top surface and includes a substantially central opening communicating with the distal end of the head and communicating with an opening in the top surface of the cutting head at the head proximal end.

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42. The chisel of claim 39 wherein the first cutting portion at least one wall includes a first upper wall and a first lower wall in opposing spaced relation located a first distance from the longitudinal axis, the second cutting portion includes a second upper wall and a second lower wall in opposing spaced relation
20 at a second distance from the longitudinal axis which is less than the first

distance, the cutting head defining a substantially central opening which communicates with an opening in the first upper and lower walls at the proximal end of the cutting head and with at least one opening at the distal end of the cutting head.

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43. The chisel of claim 39 wherein the head has a central opening, the first cutting portion defines a first opening extending through the first wall and communicating with the substantially central opening in the cutting head.

10 44. The chisel of claim 39 wherein the first cutting portion includes a second cutting edge having two legs converging at a distal apex.

45. The chisel of claim 39 wherein the second cutting portion includes a second cutting side edge extending along a periphery of the second cutting
15 portion, the second cutting side edge having a portion lying in a plane perpendicular to the direction of the longitudinal axis.

46. The chisel of claim 39 wherein the second cutting portion includes upper and lower walls in spaced opposing relation to one another and including a side
20 cutting edge extending contiguously with a periphery of the upper and lower walls.

47. The chisel of claim 39 wherein the second cutting portion includes upper and lower walls in spaced opposite relation to one another connected by a curved portion of the cutting head distal end to form a U-shaped peripheral cutting edge.
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48. The chisel of claim 39 wherein the first cutting edge includes two legs converging at a distal apex.
49. The chisel of claim 39 wherein the cutting head has a roughened surface
- 10 forming a rasp.
50. The chisel of claim 39 wherein the cutting head has a top surface having a plurality of raised sharpened projections.
- 15 51. The chisel of claim 39 wherein the cutting head includes a top surface having a plurality of raised cutting edges over a plurality of respective openings defined by the top surface such that a material shaved by the cutting edges falls through the openings.
- 20 52. The chisel of claim 39 wherein the second cutting portion of the guide

member includes a surface having a plurality of raised cutting edges, the head having a central opening therethrough, the guide member having a plurality of respective openings that communicate with the central opening.

5 53. The chisel of claim 39 wherein the first cutting edge is curved toward the proximal end of the cutting head such that end portions of the cutting edge are positioned distally in relation to a center portion of the cutting edge.

54. The chisel of claim 39 wherein the first cutting edge is angled forming an
10 apex such that the apex faces toward the proximal end of the cutting head.

55. The chisel of claim 39 wherein the second portion terminates in an arcuate cutting edge.

15 56. The chisel of claim 39 wherein the first portion wall terminates at a transverse linear cutting edge relative to the longitudinal axis and at an intermediate V-shaped cutting edge and the guide member second portion terminates at an arcuate or linear transverse cutting edge.

57. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae, the chisel comprising:
- a shank having a longitudinal axis and distal and proximal ends;
 - a handle portion coupled to the proximal end of the shank;
 - 5 a cutting head coupled to the distal end of the shank, the cutting head including a hollow body contiguous with an opening through the shank and an opening through the handle, the body of the cutting head comprising four sides distally terminating in cutting edges;
 - a scalpel comprising a knob at a proximal end and a blade edge at a distal
 - 10 end, the scalpel being removable positioned through the contiguous openings of the handle portion, the shank, and the hollow body of the cutting head such that the blade edge extends distal to the cutting edges of the cutting head.
58. The chisel of claim 57 wherein the scalpel comprises a blade portion
- 15 distally terminating in the blade edge, the blade portion coupled to a side of the distal end of the scalpel and extending along a plane substantially parallel to a longitudinal axis of the scalpel.
59. The chisel of claim 57 wherein the blade portion is planar and defines a
- 20 width extending normal to the plane of the blade portion.

60. The chisel of claim 57 wherein the blade portion is planar and defines a width extending horizontally.
- 5 61. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae, the chisel comprising:
- a shank having a longitudinal axis and distal and proximal ends;
 - a handle coupled to the proximal end of the shank;
 - a cutting head coupled to the distal end of the shank, the cutting head
- 10 including a hollow body comprising four sides each distally terminating in a cutting edge; and
- a resilient member positioned between and for resiliently coupling a first proximal portion of the shank to a second distal portion of the shank.
- 15 62. The chisel of claim 61 wherein the resilient member is a spring.
63. The chisel of claim 61 further comprising at least one supporting rod extending in a plane substantially parallel to the longitudinal axis and slidably connected to the shank, the supporting rod being fixedly connected to a proximal
- 20 end of the cutting head.

64. The chisel of claim 61 further comprising an elongated guide extending substantially parallel to the longitudinal axis and fixedly attached to the shank, a distal portion of the elongated guide element extending through the hollow body of the cutting head and distally terminating past the cutting edges and forming a planar element for insertion between adjacent vertebrae.

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65. The chisel of claim 61 wherein the elongated guide element passes through a proximate opening in the hollow body of the cutting head.

66. The chisel of claim 61 wherein the elongated guide element is planar and defines a width extending horizontally.

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67. The chisel of claim 61 wherein the elongated guide element is planar and defines a width extending vertically.

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68. A chisel for preparing adjacent vertebrae for insertion of a spinal implant into the disc space defined by the vertebrae, the chisel comprising:
a shank having a longitudinal axis and distal and proximal ends; and
a cutting head coupled to the distal end of the shank, the cutting head

including upper and lower spaced walls each defining a first cutting portion distally terminating with a first cutting edge, the first cutting edges being located with the longitudinal axis therebetween; and

a guide member extending distal to the first cutting portion and extending
5 coextensive with the shank between the upper and lower spaced walls, the guide member further including top and bottom surfaces in spaced relation with each other and at a second distance from the longitudinal axis which is less than a first distance between the first cutting edges and the longitudinal axis, the cutting head further including upper and lower openings communicating with each other and
10 extending through the cutting head, the upper and lower openings being defined by the upper and lower walls of the first cutting portions and by the top and bottom surfaces of the guide member.

69. The chisel of claim 68 wherein a plurality of support structures extend
15 between the upper and lower walls and the guide member along a periphery of the cutting head and further defining the upper and lower openings.

70. The chisel of claim 68 wherein an upper support structure extends between the upper wall and the guide member away from a periphery of the cutting head
20 such that a plurality of upper openings are defined by the upper support structure

and the periphery of the cutting head, and a lower support structure extends between the lower wall and the guide member away from the periphery of the cutting head such that a plurality of lower openings are defined by the lower support structure and the periphery of the cutting head.

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71. A method for preparation of a disc space for insertion of a spinal implant into the disc space between adjacent vertebrae, comprising the steps of:

positioning an extended guide member between adjacent vertebrae, the guide member being integral with a cutting head connected to a shank of a chisel instrument, the guide member directing first cutting edges of the cutting head into position with desired vertebrae;

removing a first portion of endplate material from at least one of two adjacent vertebrae using the first cutting edges of the cutting head; and

removing a second portion of disc material between the adjacent vertebrae using at least one second cutting edge on a distal end of the guide member.

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72. The method of claim 71 further including the step of:

scraping material from adjacent vertebrae using a third cutting edge extending along the periphery of the guide member by twisting the chisel about a longitudinal axis to displace the guide member in an arcuate path.

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73. The method of claim 71 wherein the step of removing the second portion of material further includes the second portion of material being at a less distance to a longitudinal axis of the shank than the first portion of material such that the first cutting edges are positioned a first distance from the longitudinal axis to remove the first portion of material and the second cutting edges are positioned a second distance from the longitudinal axis which is less than the first distance and positions the at least one second cutting edge to remove the second portion of material.

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74. A vertebral bone cutting chisel comprising:

a bone cutting head having proximal and distal ends and opposing first and second upper and lower walls, the proximal end for coupling to an instrument shank extending in a first direction, the distal end of said walls terminating in first edges extending transverse to the first direction; and

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a pair of spaced guide members extending from said head at and distally said first edges and terminating at second transverse edges, the guide members defining an open region therebetween, the first and second edges forming a stepped relation with each other.

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75. The chisel of claim 74 wherein the guide members are contiguous with the first edges.

76. The chisel of claim 74 wherein the head has a through chamber, the
5 chamber having a distal opening in communication with the open region.

77. The chisel of claim 76 wherein the guide members each have an opening therethrough in communication with the open region.

10 78. The chisel of claim 74 further including an intermediate third edge disposed between the first and second edges in mirror image relationship to each other.

79. The chisel of claim 78 wherein the intermediate edge is linear and
15 transverse to the first direction.

80. The chisel of claim 78 wherein the intermediate edge is V-shaped.

81. The chisel of claim 74 wherein the first edges are concave.

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82. The chisel of claim 74 wherein the first edges are convex.

83. A vertebral bone cutting chisel comprising:

a bone cutting head having proximal and distal ends and opposing first and
5 second upper and lower walls connected to and cantilevered from a side wall, the
proximal end for coupling to an instrument shank extending in a first direction, the
distal end of said walls terminating in cantilevered first and second edges

extending transverse to the first direction; and

a guide member extending from said head side wall distally said first edge.

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84. The chisel of claim 83 wherein the side walls are arcuate and in mirror
image relation extending about a common axis.

85. The chisel of claim 83 wherein the first and second edges are each
15 one of concave or convex.